

# Skills and Knowledge Progression

## Maths Year 3



### Year 3

<p><b>Place Value</b></p>	<ol style="list-style-type: none"> <li>1. Count from 0 in multiples of 4, 8, 50 and 100.</li> <li>2. Find 10 or 100 more or less than a given number</li> <li>3. Recognise the place value of each digit in a 3-digit number (hundreds, tens, ones)</li> <li>4. Compare and order numbers up to 1000</li> <li>5. Identify, represent and estimate numbers using different representations</li> <li>6. Read and write numbers to at least 1000 in numerals</li> <li>7. Read and write numbers to at least 1000 in words</li> <li>8. Solve number problems and practical problems involving these ideas (puzzles)</li> </ol>	<p>Demonstrate all elements of ‘Y3 Expected’ using manipulatives and a range of representations as well as simple written recordings.</p> <ol style="list-style-type: none"> <li>1. <b>Spot the mistake:</b> 50, 100, 115, 200. What is wrong with this sequence of numbers? True or False? 38 is a multiple of 8? What comes next? <math>936 - 10 = 926</math> <math>92 - 10 = 916</math> <math>916 - 10 = 906</math>.</li> <li>2. <b>Do, then explain:</b> 835 535 538 388 508 If you wrote these numbers in order starting with the smallest, which number would be third? Explain how you ordered the numbers.</li> <li>3. <b>Do, then explain:</b> Show the value of the digit 3 in these numbers. 341 503 937 Explain how you know.</li> <li>4. <b>Make up an example:</b> Create numbers where the digit sum is three. Eg 120, 300, 210 What is the largest/smallest number?</li> </ol>
<p><b>Addition and Subtraction</b></p>	<ol style="list-style-type: none"> <li>1. Add and subtract numbers mentally including a three-digit number and ones</li> <li>2. Add and subtract numbers mentally including a three-digit number and tens</li> <li>3. Add and subtract numbers mentally including a three-digit number and hundreds</li> <li>4. Add and subtract numbers with up to three digits using the column addition (+)</li> <li>5. Add and subtract numbers with up to three digits using column subtraction (-)</li> <li>6. Estimate the answer to a calculation and use the inverse operation to check answers</li> <li>7. Solve missing number problems involving + and -</li> <li>8. Solve problems involving the use of + and - number facts</li> <li>9. Solve 1 step problems involving + and - in context</li> <li>10. Solve 2 step problems involving + and - in context</li> </ol>	<p>Demonstrate all elements of ‘Y3 Expected’ in a range of contexts and types of problem solving (measure, time, word problems, logic puzzles, finding all possibilities, true/false, finding and describing patterns and sequences)</p> <ol style="list-style-type: none"> <li>1. <b>True/false?</b> Are these number sentences true or false? <math>597 + 7 = 614</math>; <math>804 - 70 = 744</math>; <math>768 + 140 = 908</math> Give your reasons.</li> <li>2. <b>Hard and easy questions:</b> Which questions are easy / hard? <math>323 + 10 = ?</math>; <math>393 + 10 = ?</math>; <math>454 - 100 = ?</math>; <math>954 - 120 = ?</math> Explain why you think the questions are hard.</li> <li>3. <b>Convince me:</b> <math>?? + ?? + ??</math>. The total is 201. Each missing digit is either a 9 or a 1. Write in the missing digits. Is there only one way of doing this or lots of ways? Convince me.</li> <li>4. <b>Making an estimate:</b> Which of these number sentences have the answer that is between 50 and 60; <math>174 - 119</math>; <math>333 - 276</math>; <math>932 - 871</math>.</li> <li>5. <b>Always, sometimes, never:</b> Is it always, sometimes or never true that if you subtract a multiple of 10 from any number the units digits of that number stays the same? Is it always, sometimes or</li> </ol>

		never true that when you add two numbers together you will get an even number?
<b>Multiplication and Division</b>	<ol style="list-style-type: none"> <li>1. Recall and use <math>\times</math> and <math>\div</math> facts for the 5 multiplication tables</li> <li>2. Recall and use <math>\times</math> and <math>\div</math> facts for the 2 multiplication tables</li> <li>3. Recall and use <math>\times</math> and <math>\div</math> facts for the 3 multiplication tables</li> <li>4. Recall and use <math>\times</math> and <math>\div</math> facts for the 4 multiplication tables</li> <li>5. Recall and use <math>\times</math> and <math>\div</math> facts for the 8 multiplication tables</li> <li>6. Recall and use <math>\times</math> and <math>\div</math> facts for the 10 multiplication tables</li> <li>7. Write and calculate mathematical statements for <math>\times</math> and <math>\div</math></li> <li>8. Use mental strategies to multiply <math>2d \times 1d</math></li> <li>9. Use efficient written method to multiply <math>3d \times 1d</math></li> <li>10. Solve problems, including missing number problems involving multiplication and division</li> <li>11. Solve problems that involve scaling up or scaling down</li> </ol>	<p>Demonstrate all elements of ‘Y3 Expected’ in a range of contexts and types of problem solving (measure, time, word problems, logic puzzles, finding all possibilities, true/false, finding and describing patterns and sequences)</p> <ol style="list-style-type: none"> <li>1. <b>Missing numbers:</b> <math>24 = ? \times ?</math> Which pairs of numbers could be written in the boxes?</li> <li>2. <b>Making links:</b> Cards come in packs of 4. How many packs do I need to buy to get 32 cards?</li> <li>3. <b>Use a fact:</b> <math>20 \times 3 = 60</math>. Use this fact to work out <math>21 \times 3 =</math>; <math>22 \times 3 =</math>; <math>23 \times 3 =</math>; <math>24 \times 3 =</math>.</li> <li>4. <b>Making links:</b> <math>4 \times 6 = 24</math>. How does this fact help you to solve these calculations? <math>40 \times 6 = ?</math>; <math>20 \times 6 = ?</math>; <math>24 \times 6 = ?</math></li> <li>5. <b>Prove it:</b> What goes inside the missing box? Prove it.</li> <li>6. <b>How close can you get?</b> <math>?? \times ?</math> Using the digits 2, 3 and 4 in the calculation above how close can you get to 100? What is the largest product? What is the smallest product?</li> <li>7. <b>True or false?:</b> All the numbers in the two times table are even. There are no numbers in the three times table that are also in the two times table.</li> <li>8. <b>Use the inverse:</b> Use the inverse to check if the following calculations are correct <math>23 \times 4 = 82</math>; <math>117 \div 9 = 14</math>.</li> <li>9. <b>Size of an answer:</b> Will the answer to the following calculations be greater or less than 80? <math>23 \times 3 = ?</math>; <math>32 \times 3 = ?</math>; <math>42 \times 3 = ?</math>; <math>36 \times 2 = ?</math></li> </ol>
<b>Fractions</b>	<ol style="list-style-type: none"> <li>1. Count up and down in tenths</li> <li>2. Recognise that tenths arise from dividing an object in to 10 equal parts</li> <li>3. Recognise that tenths arise from dividing 1 digit numbers or quantities by 10</li> <li>4. Recognise, find and write unit fractions of a discrete set of objects</li> <li>5. Recognise, find and write non- unit fractions (<math>\frac{2}{3}</math>, <math>\frac{3}{4}</math>, <math>\frac{4}{5}</math>, <math>\frac{5}{6}</math>) of a discrete set of objects</li> </ol>	<p>Demonstrate all elements of ‘Y3 Expected’ in a range of contexts and types of problem solving (measure, time, word problems, logic puzzles, finding all possibilities, true/false, finding and describing patterns and sequences)</p> <ol style="list-style-type: none"> <li>1. <b>Spot the mistake:</b> six tenths, seven tenths, eight tenths, nine tenths, eleven tenths.... and correct it.</li> <li>2. <b>What comes next?</b> <math>\frac{6}{10}</math>, <math>\frac{7}{10}</math>, <math>\frac{8}{10}</math>, ....., ....., <math>\frac{12}{10}</math>, <math>\frac{11}{10}</math>, ....., .....</li> </ol>

	<p>6. Recognise and show, using diagrams, equivalent fractions with small denominators</p> <p>7. Add and subtract fractions with the same denominator within one whole ( e.g. <math>5/7 + 1/7 = 6/7</math>)</p> <p>8. Compare and order unit fractions with the same denominator</p> <p>9. Solve problems that involve finding fraction of a number</p> <p>10. Solve problems that involve comparing fractions with the same denominator</p>	<p>3. <b>What do you notice?</b> <math>1/10</math> of 10 = 1; <math>2/10</math> of 10 = 2; <math>3/10</math> of 10 = 3. Continue the pattern. What do you notice?</p> <p>4. <b>True or false?:</b> <math>2/10</math> of 20cm = 2cm; <math>4/10</math> of 40cm = 4cm; <math>3/5</math> of 20cm = 12cm.</p> <p>5. <b>Give an example of</b> a fraction that is less than a half. Now another example that no one else will think of.</p> <p>6. <b>Explain how you know</b> the fraction is less than a half. (draw an image)</p> <p>7. Ben put these <b>fractions in order</b> starting with the smallest. Are they in the correct order? One fifth, one seventh, one sixth.</p> <p>8. <b>Odd one out:</b> Which is the odd one out in each of these trios <math>1/2</math>, <math>3/6</math>, <math>5/8</math>; <math>3/9</math>, <math>2/6</math>, <math>4/9</math>. Why?</p> <p>9. <b>What do you notice?</b> Find <math>2/5</math> of 10. Find <math>4/10</math> of 10. What do you notice? Can you write any other similar statements?</p> <p>10. <b>Ordering:</b> Put these fractions in the correct order, starting with the smallest. <math>4/8</math>, <math>3/4</math>, <math>1/4</math>.</p> <p>11. <b>What do you notice?</b> <math>1/10 + 9/10 = 1</math>; <math>1/10 + 8/10 = 1</math>; <math>3/10 + 7/10 = 1</math></p> <p>12. <b>Continue the pattern:</b> Can you make up a similar pattern for eighths?</p> <p>13. <b>The answer is 5/10, what is the question?</b> (Involving fractions/operations)</p>
<p><b>Measurement</b></p>	<p>1. Measure, compare, add and subtract:</p> <ul style="list-style-type: none"> <li>• Lengths (mm/cm/m)</li> <li>• Mass (g/kg)</li> <li>• Volume/capacity (l/ml)</li> </ul> <p>2. Measure the perimeter of simple 2-D shape</p> <p>3. Add amounts of money using both £ and p in practical contexts</p> <p>4. Subtract amount of money to give change, using both £ and p in practical contexts</p> <p>5. Solve two step problems involving money where (+) and giving change (-) is used</p> <p>6. Tell and write the time from an analogue clock to the nearest minute</p>	<p>Demonstrate all elements of ‘Y3 Expected’ in a range of contexts and types of problem solving (measure, time, word problems, logic puzzles, finding all possibilities, true/false, finding and describing patterns and sequences)</p> <p>1. <b>Top tips:</b> Put these measurements in order starting with the largest. Half a litre, Quarter of a litre, 300ml. Explain your thinking.</p> <p>2. <b>Position the symbols:</b> Place the correct symbol between the measurements &lt; or &gt;. 306 ? Half a metre and 930ml ? 1 litre. Explain your thinking.</p> <p>3. <b>Undoing:</b> A programme lasting 45 minutes finishes at 5:20. At what time did it start? Draw the clock at the start and the finish time.</p>

	<p>7. Tell and write the time from an analogue clock that uses roman numerals to the nearest minute</p> <p>8. Tell and write the time from 12-hour and 24-hour clocks</p> <p>9. Record and compare the time in terms of: seconds, minutes and hours</p> <p>10. able to use vocabulary such as a.m. /p.m., morning, afternoon, noon and midnight</p> <p>11. Know the number of seconds in a minute, the number of days in each month</p> <p>12. Know the number of days in a year and leap year; compare duration of events</p> <p>13. Calculate the time taken by particular events or tasks</p>	<p>4. <b>Explain thinking:</b> Salha says that 100 minutes is the same as 1 hour. Is Salha right? Explain why.</p> <p>5. <b>Write more statements:</b> (You may choose to consider this practically) If there is 630ml of water in a jug, how much water do you need to add to end up with a litre of water? What if there was 450ml to start with? Make up some more questions like this.</p> <p>6. <b>Testing conditions:</b> A square has sides of a whole number of cm. Which of the following measurements could represent its perimeter? 8cm, 18cm, 24cm, 25cm?</p> <p>7. <b>Possibilities:</b> I bought a book which cost between £9 and £10 and I paid with a ten pound note. My change was between 50p and £1 and was all in silver coins. What price could I have paid?</p> <p>8. <b>Working backwards:</b> Tom’s bus journey takes half an hour. He arrives at his destination at 9:25. At what time did his bus leave? 9:05, 8:55, 8:45.</p> <p>9. <b>The answer is.....</b> 25 minutes <b>What is the question?</b></p> <p>10. <b>What do you notice?</b> 1 minute = 60 seconds; 2 minutes = 120 seconds; Continue the pattern. Write down some more time facts like these.</p>
<p><b>Geometry</b></p>	<ol style="list-style-type: none"> <li>1. draw 2-D shapes; - describe 2-D shapes; describe 3-D shapes</li> <li>2. Recognise 3-D shapes in different orientations</li> <li>3. Know that 90° is a quarter turn</li> <li>4. Identify right angles</li> <li>5. Recognise that two right angles make a half turn (180°)</li> <li>6. Recognise that three right angles make a three quarters of a turn (270°)</li> <li>7. Recognise that four right angles make a complete turn (360°)</li> <li>8. Identify whether angles are greater than or less than a right angle</li> <li>9. Identify horizontal lines in relation to other lines</li> <li>10. Identify vertical lines in relation to other lines</li> <li>11. Identify perpendicular lines in relation to other lines</li> <li>12. Identify parallel lines in relation to other lines</li> </ol>	<p>Demonstrate all elements of ‘Y3 Expected’ in a range of contexts and types of problem solving (measure, time, word problems, logic puzzles, finding all possibilities, true/false, finding and describing patterns and sequences)</p> <ol style="list-style-type: none"> <li>1. <b>What’s the same, what’s different?</b> What is the same and different about these three 2-D shapes? (Square, circle, oblong)</li> <li>2. <b>Visualising:</b> I am thinking of a 3-dimensional shape which has faces that are triangles and squares. What could my shape be?</li> <li>3. <b>Other possibilities:</b> One face of a 3-D shape looks like this (square). What could it be? Are there any other possibilities?</li> <li>4. <b>Always, sometimes, never:</b> Is it always, sometimes or never that all sides of a hexagon are the same length?</li> <li>5. <b>Other possibilities:</b> Can you find shapes that can go with the set with this label? “Have straight sides that are different lengths.”</li> <li>6. <b>Convince me:</b> Which capital letters have perpendicular and / or parallel lines? Convince me.</li> </ol>

<p><b>Statistics</b></p>	<ol style="list-style-type: none"> <li>1. Interpret and present data using bar charts</li> <li>2. Interpret and present data using pictograms</li> <li>3. Interpret and present data using tables</li> <li>4. Solve 1-step questions such as ‘How many more?’ using info from the above scaled graphs</li> <li>5. Solve 1-step questions such as ‘How many fewer?’ using info from the above scaled graphs</li> <li>6. Solve 2-step questions using info from the above scaled graphs</li> </ol>	<p>Demonstrate all elements of ‘Y3 Expected’ in a range of contexts and types of problem solving (measure, time, word problems, logic puzzles, finding all possibilities, true/false, finding and describing patterns and sequences)</p> <ol style="list-style-type: none"> <li>1. <b>True or false?</b> (looking at a bar chart) “Twice as many people like strawberry than lime”. Is this true or false? Convince me. Make up your own true or false statement about the bar chart.</li> <li>2. <b>What’s the same, what’s different?</b> Pupils identify similarities and differences between different representations and explain them to each other.</li> <li>3. <b>Create a question:</b> Pupils ask (and answer) questions about different statistical representations using key vocabulary relevant to the objectives.</li> <li>4. Be able to demonstrate all of the above using manipulatives and a range of representations as well as written recordings.</li> <li>5. Be able to explain any Y3 Statistics concept to another pupil so that they understand it clearly.</li> </ol>